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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,633	09/19/2005	Albert Armer	3003-1031-1	4962
<small>465</small> YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314			<small>7590</small> EXAMINER KASTURE, DNYANESH G	
			<small>05/20/2008</small> ART UNIT 3746	PAPER NUMBER
			MAIL DATE 05/20/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,633

Applicant(s)

ARMER ET AL.

Examiner

DNYANESH KASTURE

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-12,14,16,18,19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-12,14,16,18,19 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The objections made to Figure 3 are withdrawn in light of the replacement drawing submitted by applicant on March 20, 2008.

Specification

2. The objections made to the specification (and title) are withdrawn in light of the amendments submitted by applicant on March 20, 2008.

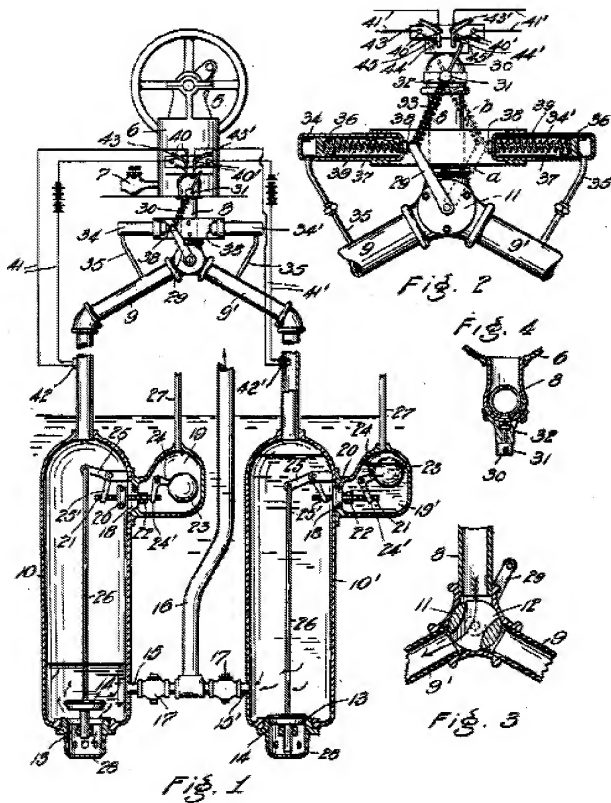
Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1,2,4,5,7,8,10,12,14,16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Emmons (US Patent 1,006,540 A).



5. In Re claim 1, with reference to Figures 1-4 as depicted above, Emmons discloses a pumping apparatus described as:

- a first container (10) including a pressurisable chamber
- an inlet (13)
- an outlet (15)
- a control apparatus (21,22,23,24,25)
- second container (19)
- pilot valve (20)
- second container (19) receiving liquid from the first container (10) through passage (18) when the liquid in the first container (10) reaches the level of passage (18)
- the pilot valve (20) configured to close the passage (18) and when the float (23) rises in response to the liquid in the second container (19). The closing of the valve (20) triggers a pressurization cycle for the motive fluid that enters through pipe (9). The motive fluid exits through pipe (27) during the depressurization cycle.
- with regards to "state" of pilot valve determining pressure within a portion of the apparatus, when the pilot valve (20) opens passage (18), the pressure is not allowed to build up in the main chamber and when the pilot valve (20) closes passage (18), the pressure is allowed to build up in the main chamber
- with regards to "shuttle valve configured to change state in response to pressure within a portion of the apparatus", valve (11) switches position (changes state) from one

main chamber to the other directly in response to pressure buildup of compressed gas in the filled chamber (portion of the apparatus)

- with regards to "state of the shuttle valve determining whether the motive gas enters into or is vented from the first container thereby implementing the pressurization/depressurization cycle", when the conduit (8) is communicating compressed gas to conduit (9'), conduit (9) is blocked off, this "state" occurs in response to build up of pressure within a portion of the apparatus - chamber (10). Conversely, when the conduit (8) is communicating compressed gas to conduit (9), conduit (9') is blocked off, this "state" occurs in response to build up of pressure within a portion of the apparatus - chamber (10'). These state changes (in response to pressure within the main chambers) along with subsequent combustion implements the pressurization/depressurization cycle.

6. In Re claim 2, Emmons discloses a non-return valve (17) intended to allow liquid to pass therethrough only when the pressure of the liquid exceeds a predetermined threshold.

7. In Re claim 4, Emmons discloses the second container (19) which is relatively small compared to the first container (10) as depicted in Figure 1.

8. In Re claim 5, Emmons discloses the second container (19) whose base is at a relatively higher location than the base of the first container (10) as shown in Figure 1.

9. In Re claim 7, Emmons discloses a Compressor (5) supplying motive fluid to first container (10).

10. In Re claim 8, Emmons discloses cylinder (34) wherein the motive fluid is supplied to or vented from, and the cylinder (34) also operates to initiate the pressurization/depressurization cycle of the first container.

11. In Re claim 10, Emmons discloses two pumps, as described:

- a first container with a pressurizable chamber:
(10) for the first pump and (10') for the second pump
- an inlet: (13) in each of the first and second pumps
- an outlet: (15) for the first pump and (15') for the second pump
- a control apparatus:
(21,22,23,24,25) for the first pump and (21,22,23,24,25') for the second pump
- with regards to "shuttle valve configured to change state in response to pressure within a portion of the apparatus", valve (11) switches position (changes state) from one main chamber to the other directly in response to pressure buildup of compressed gas in the filled chamber (portion of the apparatus)
- with regards to "state of the shuttle valve determining whether the motive gas enters into or is vented from the first container thereby implementing the pressurization/depressurization cycle", when the conduit (8) is communicating

compressed gas to conduit (9'), conduit (9) is blocked off, this "state" occurs in response to build up of pressure within a portion of the apparatus - chamber (10). Conversely, when the conduit (8) is communicating compressed gas to conduit (9), conduit (9') is blocked off, this "state" occurs in response to build up of pressure within a portion of the apparatus - chamber (10'). These state changes (in response to pressure within the main chambers) along with subsequent combustion implements the pressurization/depressurization cycle.

- the apparatus is arranged so that when one pump is discharging fluid, the other is receiving fluid, as depicted in Figure 1.

12. In Re claim 12, Emmons discloses a valve (14) in each first container of the two pumps at the inlet. As depicted in Figure 1, the valves are arranged so that when one pump is charging, the other is discharging.

13. In Re claim 14, Emmons discloses the second container (19) which is relatively small compared to the first container (10) as depicted in Figure 1.

14. In Re claim 16 and 18, Emmons discloses the second container (19) whose base is at a relatively higher location than the base of the first container (10) as shown in Figure 1.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Emmons (US Patent 1,006,540 A).

17. In Re claims 9 and 11, Emmons discloses two pumps in parallel, however it does not disclose the further valve component in each container configured to vent the motive fluid from the first container when the second vent is closed.

18. However, Emmons discloses a plug valve (11) which can be configured with the vent pipes (27), keeping one closed while the other is open.

19. It would have been obvious to a person having ordinary skill in the art at the time of the invention to install another plug valve with both vent pipes, configured to keep one vent pipe open while the other is closed for the purpose of reducing the number of components in the apparatus by using a single vent pipe for both pumps. "Common sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." KSR Int'l Co. v. Teleflex Inc. 550 U.S. ___, 82 USPQ2d 1385 (Supreme Court 2007) (KSR). In *Rational A*, "Combining prior art elements according to known methods to yield predictable results",

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step 1 is met because the vent pipes (27) and plug valve (11) are disclosed by Emmons, step 2 is met because Emmons teaches how to use the plug valve for "communication between pipe (8) and either of its branches" - Column 2; lines 55-57, and step 3 is met because Emmons suggests that venting the chambers through pipe (27) is a predictable result because the pipe (27) is used in both pumps.

20. Claims 6 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Emmons (US Patent 1,006,540 A) and in view of Jurgen (US Patent 5,582,469 A)

21. In Re claim 6, Emmons discloses that first container (10) and second container (19) are linked by a pipe/passage (18) and it also discloses all the remaining limitations of the claim except for a non return valve as set forth in the claim.

22. However, Jurgen discloses a non- return valve in Figure 2 disposed in a passage as depicted by reference (50) in Figure 1.

23. It would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate a non-return valve as taught by Jurgen into the interface (wall) between the main chamber and the float chamber of Emmons for the purpose of forming a safety line for the combusted gas in the main chamber to vent into the float chamber, in the catastrophic event of abnormal buildup of pressure in the main chamber due to failure of valving elements. Note that this emergency bypass follows the same path through the float chamber to the vent pipe (27) as before.

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24. In Re claim 19, Emmons and Jurgen as applied to claims 2 and 6 disclose all the claimed limitations.

25. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Newhouse (US Patent 1,628,608) and in view of Emmons (US Patent 1,006,540 A)

26. In Re claim 21, Newhouse discloses

- a first container (2) including a pressurisable chamber
- an inlet (8)
- an outlet (9)
- a control apparatus (20)
- with regards to steam being the motive gas, Column 1, Page 1, Lines 12-14 state: "...controlling the admission and exhaust of air or other fluid..", the apparatus is capable of using steam as other motive fluid.

27. However, Newhouse does not disclose a second container and associated elements as set forth in the claim.

28. Nevertheless, Emmons discloses the second container receiving liquid from the first container, the second container and valves configured to determine when the pressurization/depressurization cycle takes place (as discussed above).

29. It would have been obvious to a person having ordinary skill in the art at time of the invention to modify the apparatus Newhouse to incorporate a second container and its operation as taught by Emmons as an alternative design choice for a pumping fluid accumulating in the first container.

Response to Arguments

30. Applicant argues that the amended claim 1 which now involves a shuttle valve is in condition for allowance because the valve (11) offered by Emmons does not meet the recited shuttle valve in claim 1. The valve (11) allegedly is used only to switch the flow of inflammable gas away from one chamber that is filled to the other chamber that has emptied. The plug valve (11) allegedly does not allow motive air to enter the switch container when that container is filled and vent the same container when that container is emptied. By way of further explanation, the applicant alleges the following:

31. The pump of EMMONS allows water to flow into the pump chamber through a valve (at opening 12/13) that is linked mechanically to a float valve unit that also closes a vent valve 20 at a higher level passage 18 in the chamber. An inflammable gas flows into the chamber during the filling phase and is then evacuated to atmosphere when the valve is open. On closure of the vent valve 20 pressure will rise and, provided that there is sufficient back pressure in the delivery pipe, a thrust cylinder 21 then changes over the flammable gas line and ignition occurs. The water in the chamber is discharged and the combustion products must follow water into the delivery pipe until the chamber pressure falls sufficiently so that the float valve can be reopened. The presence of water in the delivery pipe may hold the pressure in the chamber at a level sufficient to allow the float chamber to be maintained without draining with the float valve being closed so that the pumping chamber will not refill. In contrast, in the claimed apparatus, motive

gas does not exit via the liquid delivery line. The float operated valve 318 opens on high level in the chamber 304 and emits gas so as to lower the pressure in an external pipe. This pressure change initiates the opening of a separate valve that admits the motive gas and the closing of the separate vent valve. The float valve chamber and the main pumping chamber will be at the same pressure. When the liquid level falls in the main chamber it is followed by the level in the flow chamber and the float valve closes. Pressure then rises in the external pipe and the motive gas inlet and vent valves reset. Therefore, the overall operation and arrangement of the claimed apparatus is significantly different than that of EMMONS. Moreover, there is no suggestion to modify EMMONS to produce an arrangement that would involve a shuttle valve according to amended claim 1.

32. The Examiner respectfully disagrees with the applicants' arguments because they are not persuasive for the following reasons:

33. The valve (11) only switches over after the compressed air has built up enough pressure to overcome the force of the springs associated with piston (36) thus allowing the motive air to build up pressure after the main chamber is filled. The pump allows water to flow through valve (13) and not through valve (12). When water in the main chamber is discharged, the combustion products do not follow water into the delivery pipe, the combustion products enter the smaller chamber (19) when it empties, and subsequently exit from the vent pipe (27). The presence of water in the delivery pipe will not hold pressure in the chamber to allow float chamber to be maintained because the pilot valve (20) is designed so that "the weight of the water within the compartment

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19' opens the valve 20 and then empties into the drum" as stated in Column 2, Page 2, Lines 78-80. Therefore the claimed apparatus is not in contrast with Emmons. Note that the applicant has incorrectly referenced the thrust cylinder as (21) when it should be (37). In addition, the configuration of valve (11) is substantially the same as the claimed shuttle valve and it operates the same way. The following table shows the equivalencies in the reference numerals of Applicants' Figure 3 and Emmons' Figure 2 related to the shuttle valve:

Applicants' Reference (Fig. 3)	Emmons Reference (Fig 2)
307	8
342	9
306	9'
338	34
339	36

The claimed shuttle valve switches the port 307 between ports 306 and 342; valve (11) of Emmons switches the element (8) between elements (9) and (9')

34. Applicants' arguments related to the dependant claims are moot since the independent claim is not in condition for allowance.

Conclusion

Since the previous indication of allowability of claims 6 and 19 is hereby withdrawn and substituted by a rejection instead, this action is made **NON – FINAL**.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **DNYANESH KASTURE** whose telephone number is (571)270-3928. The examiner can normally be reached on Mon-Fri, 9:00 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272 - 7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746

DGK